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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,348	08/14/2001	Takanobu Noguchi	Q65688	6677
7590 10/20/2004				
SUGHRUE MION ZINN MACPEAK & SEAS, PLLC 2100 Pennsylvania Avenue, NW Washington, DC 20037-3213			EXAMINER YAMNITZKY, MARIE ROSE	
			ART UNIT 1774	PAPER NUMBER
DATE MAILED: 10/20/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/928,348

Applicant(s)

NOGUCHI ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 August 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's amendment filed on August 04, 2004, which amends claim 1, has been entered.

Claims 1 and 3-7 are pending.

2. Claims 3-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitations of claim 3, with claims 4-7 dependent therefrom, are not clear as dependent from previously cancelled claim 2. In the last line of claim 3, "1 or 2" should be changed to --1--.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Reisch et al. in *Macromol. Chem. Phys.* Vol. 200, No. 3 (1999), pp. 552-561, for reasons of record in Paper No. 7 (the Office action mailed April 09, 2003).

5. Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh (US 5,817,430).

Hsieh discloses monomers of the formula  $X-CH_2-Ar-CH_2-X'$  to be used to make a soluble conjugated poly(arylene vinylene) of the formula  $R-CH_2-[Ar-CH=CH-]_n-Ar-CH_2-R$  wherein  $n$  is an integer from about 5 to about 100,000. For example, see column 3, line 23-c. 4, l. 16 and c. 7, l. 18-50.  $Ar$  preferably contains at least one solubilizing substituent having from 2 to about 25 carbon atoms (e.g. see c. 3, l. 41-42). The polymer preferably has a weight average molecular weight ( $M_w$ ) of from about 1,000 to about 1,000,000, more preferably from about 10,000 to about 500,000 (e.g. see c. 15, l. 20-23). While Hsieh does not disclose a range for the number average molecular weight ( $M_n$ ) of the polymers, Hsieh's working examples provide polymers having number average molecular weights within the range required by the present claims (see Table 1 on page 20). The polymer is disclosed as an electroluminescent polymer for use as a light-emitting polymer in electroluminescent displays and devices.

Hsieh names three specific monomers that, when polymerized according to the method disclosed and claimed by Hsieh, provide polymeric fluorescent substances according to the present claims in which  $Ar_1$  is a mono-substituted arylene group wherein the mono-substituent is represented by present formula (2).

“2-[4'-(2"-phenyl-1",3",4"-oxadiazol-5"-yl)phenoxy]-1,4-bis(chloromethyl)benzene” (disclosed at c. 7, l. 43-44 and recited in patent claim 10) provides a repeating unit of present formula (1) in which m is 1, each of R<sub>1</sub> and R<sub>2</sub> is hydrogen, Ar<sub>1</sub> is a mono-substituted arylene (phenylene) group carrying a substituent of present formula (2) wherein X represents -O- and Ar<sub>2</sub> represents an aryl group having 6 to 60 carbon atoms participating in the conjugation and having a heterocyclic compound group having 2 to 60 carbon atoms as a substituent.

“2-[4'-(di-p-t-butylphenylamino)phenoxy]-1,4-bis(chloromethyl)benzene” (disclosed at c. 7, l. 46-47 and recited in patent claim 10) provides a repeating unit of present formula (1) in which m is 1, each of R<sub>1</sub> and R<sub>2</sub> is hydrogen, Ar<sub>1</sub> is a mono-substituted arylene (phenylene) group carrying a substituent of present formula (2) wherein X represents -O- and Ar<sub>2</sub> represents an aryl group having 6 to 60 carbon atoms participating in the conjugation and having a diarylamino group having 16 to 60 carbon atoms as a substituent.

“2-[(p-styryl)phenoxy]-1,4-bis(chloromethyl)benzene” (disclosed at c. 7, l. 48-49 and recited in patent claim 10) provides a repeating unit of present formula (1) in which m is 1, each of R<sub>1</sub> and R<sub>2</sub> is hydrogen, Ar<sub>1</sub> is a mono-substituted arylene (phenylene) group carrying a substituent of present formula (2) wherein X represents -O- and Ar<sub>2</sub> represents an aryl group having 6 to 60 carbon atoms participating in the conjugation and having an arylalkenyl group having 8 to 60 carbons atom as a substituent.

While Hsieh does not provide a specific example of a polymer made from any of the three monomers referenced above, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to utilize the specific monomers disclosed by Hsieh in

order to make polymers according to Hsieh's invention. Given the disclosure of the Hsieh patent, particularly the disclosure in the paragraph beginning at c. 7, l. 18 and the subject matter of patent claim 10, one of ordinary skill in the art at the time of the invention would have reasonably expected that any of the three specific monomers referenced above could be substituted for the monomer 2-methoxy-5-(2'-ethylhexyloxy)-1,4-bis(chloromethyl)benzene of Hsieh's working examples in order to obtain other electroluminescent polymers suitable for use as a light-emitting polymer in electroluminescent displays and devices as taught by Hsieh.

With respect to present claims 4-7, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to use a polymeric light emitting device as taught by Hsieh to provide light sources and displays as is known in the art.

6. Applicant's arguments filed August 04, 2004 have been fully considered but they are not persuasive with respect to the rejection based on the article by Reisch et al. (The rejection based on the Hsieh patent is a new rejection.)

Applicant argues that Reisch is relied upon as teaching homologs but that Reisch does not teach homologs of the presently claimed polymers. Two of the five prior art polymers relied upon are considered by the examiner to be homologs of the presently claimed polymers. The other three prior art polymers that are relied upon are structurally similar to the presently claimed polymers although they are not homologs.

Applicant argues that Reisch teaches di-substituted polymers whereas the presently claimed polymeric substance is mono-substituted. This argument is not persuasive because,

while present claim 1 recites “each Ar<sub>1</sub> independently carrying a substituent represented by the below formula (2)”, the claim language is open and does not explicitly limit Ar<sub>1</sub> to a mono-substituted arylene group. It is not clear that claim 1 is restricting Ar<sub>1</sub> from representing arylene groups having more than one substituent represented by formula (2) and/or from representing arylene groups having a substituent represented by formula (2) and one or more substituents that are not represented by formula (2).

The present specification sets forth numerous formulae representing examples of Ar<sub>1</sub>. Each of the formulae contains more than one “R” variable. As taught on page 14 of the specification, at least one R is a substituent represented by formula (2) and each of the other R variables can be hydrogen, a substituent represented by formula (2), or a substituent that is not represented by formula (2) as taught in the paragraph bridging pages 14 and 15. It is the examiner’s position that, interpreting present claim 1 in light of the specification, one of ordinary skill in the art would interpret the requirement that Ar<sub>1</sub> carry a substituent of formula (2) as encompassing arylene groups carrying more than one substituent of formula (2) and as encompassing arylene groups carrying at least one substituent of formula (2) and one or more substituents that are not of formula (2).

7. Miscellaneous:

As grammatical corrections to claim 1, the examiner suggests inserting --at-- before “least” in the eleventh line after formula (2), and inserting --be-- after “may” in the seventeenth line after formula (2).

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8. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes.  
(Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY  
October 18, 2004



**MARIE YAMNITZKY  
PRIMARY EXAMINER**

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